

SECTION 1.0 INTRODUCTION

Knowledge of ancient Native American cultures is rapidly increasing as the result of Cultural Resource Management (CRM) investigations. The mandate to protect historic properties, including archaeological sites, is the direct consequence of federal legislation, especially the National Historic Preservation Act, the National Environmental Policy Act, and the Department of Transportation Act (King 1998; McManamon and Hatton 1999). The identification, evaluation, and excavation of sites prior to impending destruction by ground disturbing activities is a significant national accomplishment as documented in tens of thousands of reports. Major methodological and theoretical strides are being made in CRM as demonstrated by the production of excellent technical reports (e.g., Anderson and Joseph 1988; Bareis and Porter 1984; Chapman 1985; Schiffer and House 1975; Wall et al. 1996a, 1996b; Whittlesey et al. 1998). Articles in national journals, such as *American Antiquity* and *North American Archaeologist*, and regional journals, such as *Archaeology of Eastern North America* and *Journal of Middle Atlantic Archaeology*, make good use of rescued data sets. A main advantage of large-scale CRM investigation derives from its adequate funding base, in-depth institutional resource base, and compilation of large data sets, which collectively have the potential ability to provide major insights into Native American history. The design and management of the Hickory Bluff project provided the opportunity to gather detailed information before site destruction and to potentially enrich our understanding of the regional record.

Hickory Bluff (7K-C-411) is located on the Delmarva Peninsula, on the Low Coastal Plain of Delaware, 38 miles east of the Chesapeake Bay (Figure 1.1). The site is located six miles west of the Delaware Bay on the east bank of the St. Jones River, on the southern edge of the City of Dover, in Kent County (Figure 1.2). Given its pivotal location near a number of key Native American sites on the St. Jones and Murderkill Rivers to the south, the excavations allowed for regional archaeological comparisons, thereby contributing to state level research themes (e.g., Ames et al. 1989; Custer 1984, 1989, 1994). The excavations provided an opportunity to examine a number of major themes concerning societal changes over the 4,000 year sequence of the Late Archaic to Middle Woodland (Figure 1.3), with special attention on subperiods such as the Barker's Landing Complex, the Delmarva Adena Complex, and the Carey Complex.

SR 1 ARCHAEOLOGY

The Hickory Bluff excavations were a component of the comprehensive archaeological investigations conducted by the Delaware Department of Transportation (DelDOT) along the Route 13 Relief Project. The road corridor, now known as State Route 1 (SR 1), is 48 miles in length, extending from its northernmost point in the City of Wilmington and traveling southward to the state capital of Dover. The SR 1 corridor spans commercial, residential, industrial, agricultural, and forested areas, as well as wetlands. Given the variable terrain and its historic usage, a variety of cultural resources were predicted and identified, including prehistoric and historic archaeological sites and standing structures (Custer et al. 1984; Custer and Cunningham 1986). After nearly 20 years of survey, testing, and excavation of sites along SR 1, a number of key Native American sites have been investigated and large data sets have accumulated on paleoenvironments, chronology, settlement patterns, subsistence, and material culture (Custer et al. 1994, 1995a, 1995b, 1996; Custer and Silber 1995; Jacoby et al. 1997; LeeDecker et al. 2001;

Wall et al. 1997). The most recent and final phase of the SR 1 field investigations was conducted in 1999-2000, and included excavations at the Black Diamond Site, the Blackbird Creek Site, the Frederick Lodge Site Complex, and the Sandom Branch Site Complex. Large-scale investigations at these four SR 1 sites resulted in the excavation of 1,200 one by one m units and stripping of 4,227 square meters, and revealed substantial evidence for Archaic and Woodland Period occupation, including early use of bay-basins and recovery of thermally altered rock clusters, stone tool manufacturing loci, and basin features with ceramics.

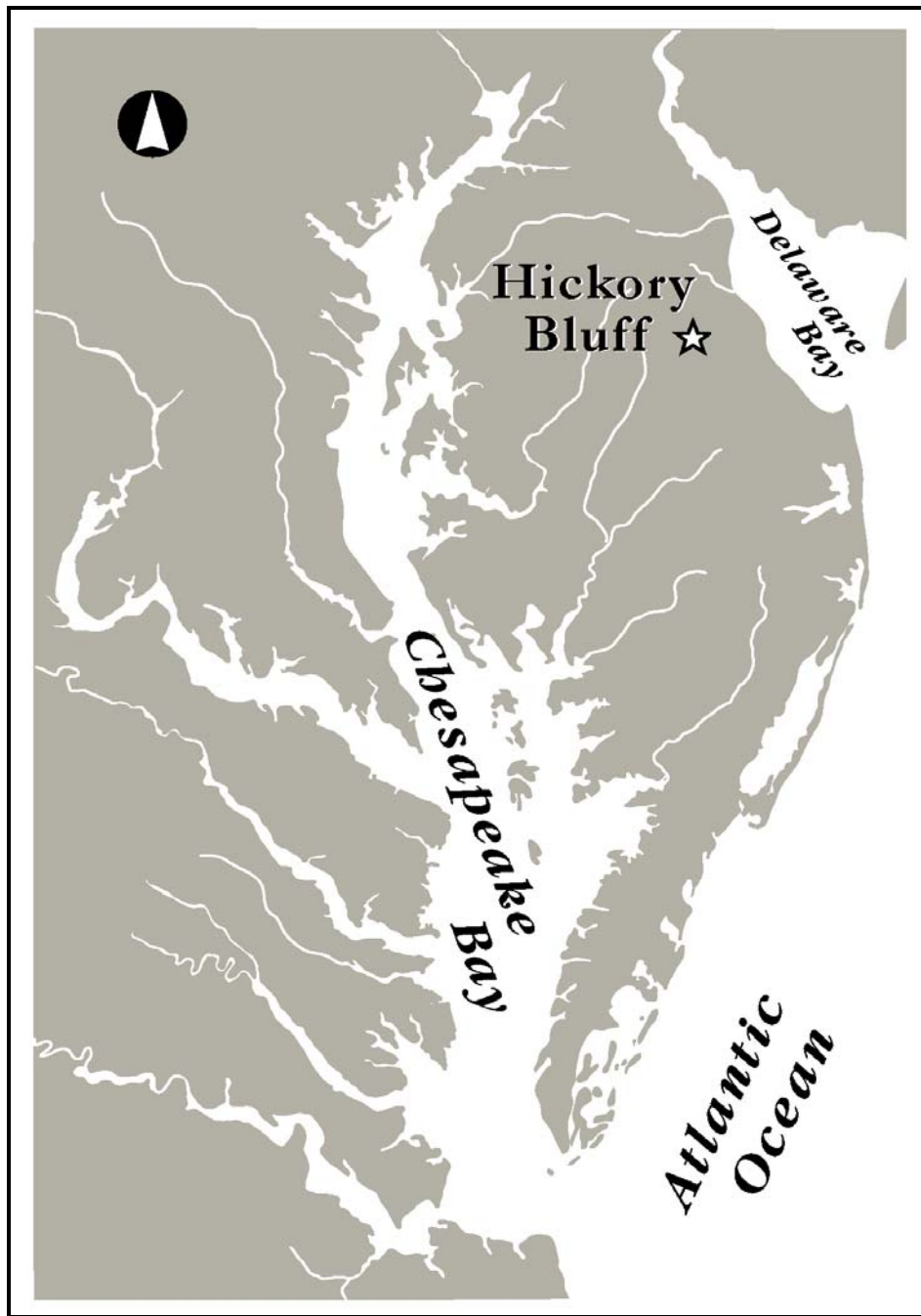


Figure 1.1 Location of Hickory Bluff on the Delmarva

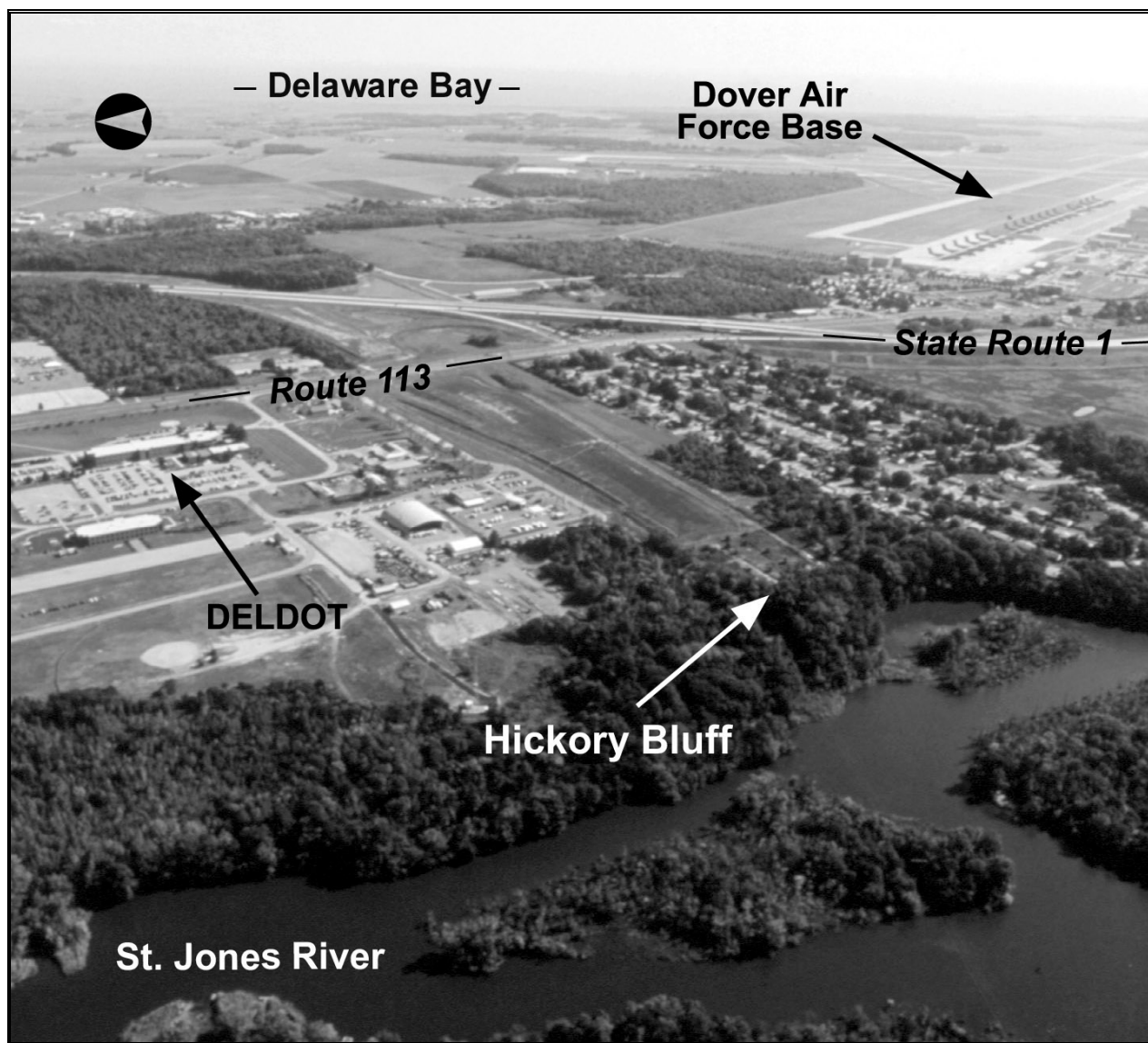


Figure 1.2 Aerial View of Hickory Bluff, Looking East

	CLIMATIC EPISODES	TRADITIONAL EASTERN CHRONOLOGY	DELMARVA CHRONOLOGY	WOODLAND COMPLEXES OF THE HIGH COASTAL PLAIN AND PIEDMONT / FALL LINE PROVINCES			
A.D. 1600	SUB-ATLANTIC	LATE WOODLAND	WOODLAND II	MINGUANNAN			
A.D. 1000		MIDDLE WOODLAND	WOODLAND I	WEBB-- DELAWARE PARK			
A.D. 500				CAREY -- BLACK ROCK			
A.D. 0				BLACK ROCK-- DELMARVA ADENA			
500 B.C.	SUB-BOREAL	EARLY WOODLAND		CLYDE FARM-- BARKER'S LANDING			
3000 B.C.		LATE ARCHAIC					
4500 B.C.		MIDDLE ARCHAIC	ARCHAIC				
ATLANTIC							
6500 B.C.	BOREAL	EARLY ARCHAIC	PALEO-INDIAN				
8500 B.C.	PRE-BOREAL	PALEO-INDIAN					
0,500 B.C.							
2,000 B.C.	LATE GLACIAL						

Figure 1.3 Comparison of Prehistoric Chronologies

Hickory Bluff was investigated as part of the SR 1 Puncheon Run Connector, a road and bridge construction project that was planned on the south edge of Dover. The now-constructed Puncheon Run Connector links SR 1 to the east with Route 13 at the southeast boundary of Dover. From its easternmost intersection with SR 1, the Puncheon Run Connector traversed Hickory Bluff, crossing the St. Jones River alongside the Puncheon Run stream (Figure 1.4).

From the beginning of the SR 1 investigations in the 1980s, public outreach occurred alongside the archaeological investigations. Public outreach activities reached over 20,000 individuals as part of field visits and lectures, and promotion of the archaeology program resulted in the publication of over 30 newspaper and magazine articles and dozens of radio and television spots. Distribution of data and reporting to professional archaeologists also has been a major goal, leading to over fifty SR 1 technical reports, some fifty papers at regional and national conferences, and at least 25 professional publications. Future compilation and synthesis of the SR 1 findings is planned, providing a direction for future archaeological analyses and effective management of cultural resources in this region.

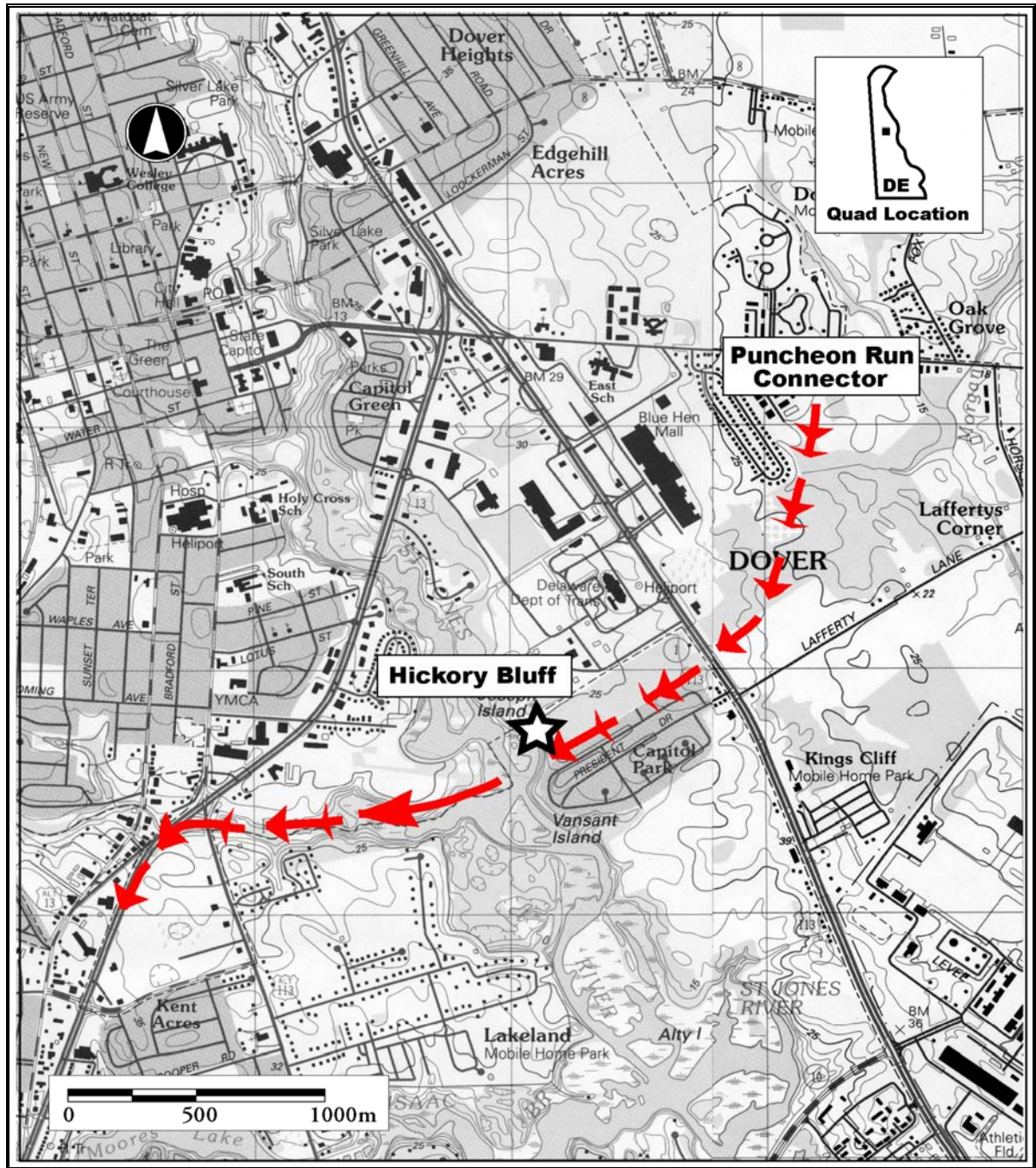


Figure 1.4 Puncheon Run Connector Passing Across Hickory Bluff and the St. Jones River

HUNTER RESEARCH INVESTIGATIONS

Survey and Evaluative Testing

Archaeology at Hickory Bluff began with survey and evaluative testing of the proposed Puncheon Run corridor by Hunter Research (Hunter Research, Inc. 1995; Liebeknecht et al. 1997; Liebeknecht 1999) (Figure 1.5). From September to December 1994, investigations were conducted along the proposed 100 meter (m) wide project corridor, consisting of open grassland

and a fringe of woodlands along the St. Jones River. Fieldwork commenced with the placement of 66 shovel test pits (STPs) along five main transects spaced 30 m apart (). STPs were originally placed every 30 m along each transect; the interval was decreased to 7.5 m along the bluff edge because of anticipated increases in artifact density. At the end of Phase I, Hickory Bluff measured 5 acres in size, the eastern boundary defined as a point 300 m to the east of the St. Jones River bluff.

Given the presence of artifacts and potential subsurface deposits, Hickory Bluff was evaluated for eligibility to the National Register of Historic Places (NRHP). The Phase II fieldwork aimed to refine site boundaries and test artifact concentrations (Liebeknecht et al. 1997). An additional 31 STPs were used to define the southern boundary of the site and indicated that the site extended along the St. Jones River, up to the Capital Park residential development. A total of 28 one by one m test units was then judgmentally placed across the site to sample areas of high and low artifact density and to locate subsoil features, particularly along the river bluff.

Dr. Joseph Schuldenrein of Geoarchaeology Research Associates conducted a preliminary geoarchaeological assessment of the Hickory Bluff. Exposed profiles in archaeological excavation units and a series of cores placed along the terrace indicated that Pleistocene and Holocene deposits were present. Initial observations suggested that the stratigraphy had a potential aeolian contribution, deflation differentially stripping deposits and alternately exposing and concealing occupation surfaces.

During the testing program, subsoil features were located in 14 test units; these tentatively were described as pit features in profile and interpreted as “pithouses”. Three radiocarbon dates were obtained from bulk soil samples, yielding dates of 2480 ± 60 years before present (B.P.), 2600 ± 60 years B.P., and 2790 ± 60 years B.P. (Liebeknecht et al. 1997). Based on the identification of a wide range of artifacts, the depositional integrity of the deposits, and the ability of the site to yield insights on a variety of topics in prehistory, Hickory Bluff was recommended as eligible for listing on the NRHP.

In addition to the prehistoric artifacts recovered and the features identified from Hickory Bluff, two surface scatters of historical materials were recorded and consisted of early twentieth century equine salt feeders and a scatter of late nineteenth century domestic debris (Liebeknecht et al. 1997). The historical component was not considered NRHP-eligible.

A Phase III research design was prepared to mitigate adverse effects of the road corridor construction on the portions of Hickory Bluff within the right-of-way (Hunter Research, Inc. 1995). Based on broad research domains identified for the Delmarva, site-specific research topics were identified for Hickory Bluff and consisted of site formation processes involving occupational histories and depositional/deflationary regimes, chronological framework to define the series of Woodland occupations, cultural adaptation and population increase and density based on occupation size and storage capacity of features, seasonal settlement patterns and mobility, technological organization indicated by local and non-local lithic raw material usage, social complexity of Adena domestic occupations and parallels with social stratification in mortuary sites, and feature formation and function, specifically the creation and function of large ovoid subsoil pit features.

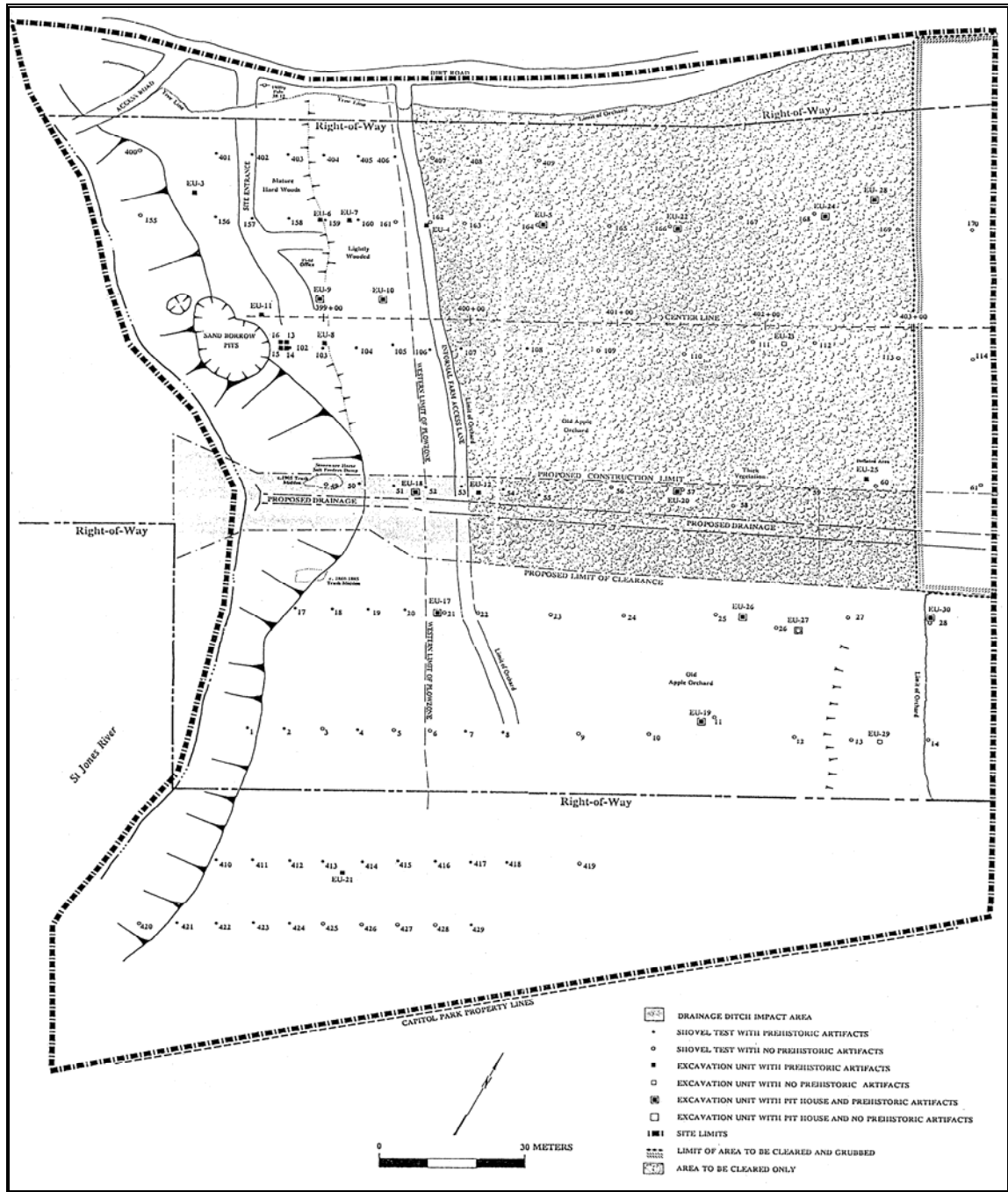


Figure 1.5 Hickory Bluff Fieldwork Map by Hunter Research
(Liebeknecht et al. 1997: Figures 8.1a, 8.1b.)

Table 1.1 Summary of Early Investigations at Hickory Bluff

Phase	STPs	Split Spoon Augering	1 X 1 m Units	Mechanical
Phase I	66	0	0	0
Phase II	31	0	28	0
Phase III, Drainage	0	600	99	2,300m ²
Total	97	0	127	2,300m ²

The First Excavations

In recognition of the significance of Hickory Bluff, and in consideration of DelDOT's schedule requirements to first construct a drainage ditch on the south edge of the future road, excavation was implemented in this area in January and February of 1995 (Figure 1.6). Systematic sampling was conducted in the proposed drainage ditch and included excavation of 99 one by one m units and more than 600 split-spoon auger tests () (Hunter Research, Inc. 1995). Twenty-four of the 99 units were located using a 10 m grid extending across the site; the other 75 units were judgmentally placed in areas with higher artifact density and possible feature locations. Most of the 75 units were placed in two large excavation blocks (Figure 1.7); two small cruciforms were located around earlier stage units placed in the northern portion of the drainage ditch corridor. Split-spoon augering was conducted on a two m grid across the site; one m spacing was used in areas where soil anomalies or probable subsoil features were encountered.

Sixteen possible features were identified through augering and nine additional pit features were identified in the 75 judgmentally placed units. Several of the features were considered to be significant residential and ceramic production features (Liebeknecht et al. 1997; Liebeknecht 1999). Pithouse 1 in one block excavation was identified to be large in planview and having sloping surfaces in profile. Eight residential structures (Pithouses 2-9) were identified in the block excavation closest to the bluff edge. "The opening up of a larger area of contiguous units here resulted in the identification of a series of adjacent and overlapping pit features, all of which are considered to be pit houses" (Liebeknecht et al. 1997:9-3; Liebeknecht 1999:5) (Figure 1.8). The pithouse group was interpreted as an overlapping series of temporal and occupational episodes dated to the Early and Middle Woodland periods. Pithouse 4 was considered to have an intact living floor along the bottom of the upper basement and was described as having a unique set of internal features, consisting of a stack of 56 ceramic sherds, representing the upper portions of two vessels, adjacent to a clay and grog-filled bell-shaped pit. These associations were interpreted to represent ceramic production. "Together, these features suggest the on-site production of ceramic vessels from the upper portions of old vessels. The small pit feature within Pit House 4 demonstrates that ceramic vessels were being crushed and recycled as tempering material on site" (Liebeknecht 1999:9). In addition to these features, a small thermally altered rock cluster was identified and interpreted as a stone boiling dump.

At the completion of the excavations, drainage ditch construction was monitored by archaeologists in August 1995. Mechanical removal of the plow zone in the ditch provided a planview of subsoil anomalies over an area approximately 20 m north-south and 115 m east-west. A total of 72 round or ovoid pit features was discovered and drawn in plan. Soil probing indicated that the depths of these features varied from 40 centimeters (cm) to 1 m below plow zone. Once the ditch was excavated, the archaeologists identified a previously unidentified buried A/B-horizon at a depth of 60-120 cm below surface (Liebeknecht et al. 1997:9-23).

The artifact assemblage recovered in the multiple phases of archaeological fieldwork included projectile points, ceramics, bifaces, unifaces, cores, flakes, and thermally-fractured rock. A variety of projectile point styles and ceramics placed occupation at Hickory Bluff from the Archaic through the Late Woodland periods.

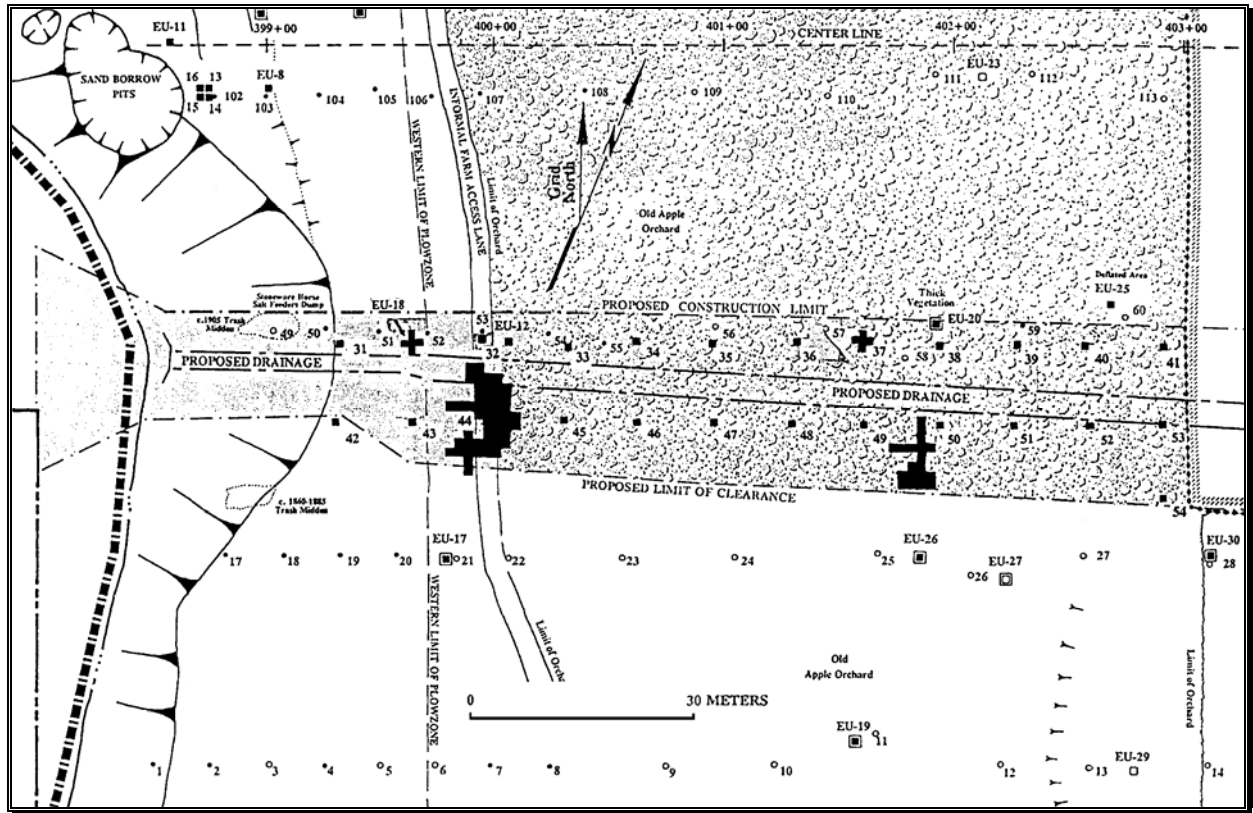


Figure 1.6 Data Recovery Excavations by Hunter Research (Liebeknecht et al. 1997: Figure 9.1)

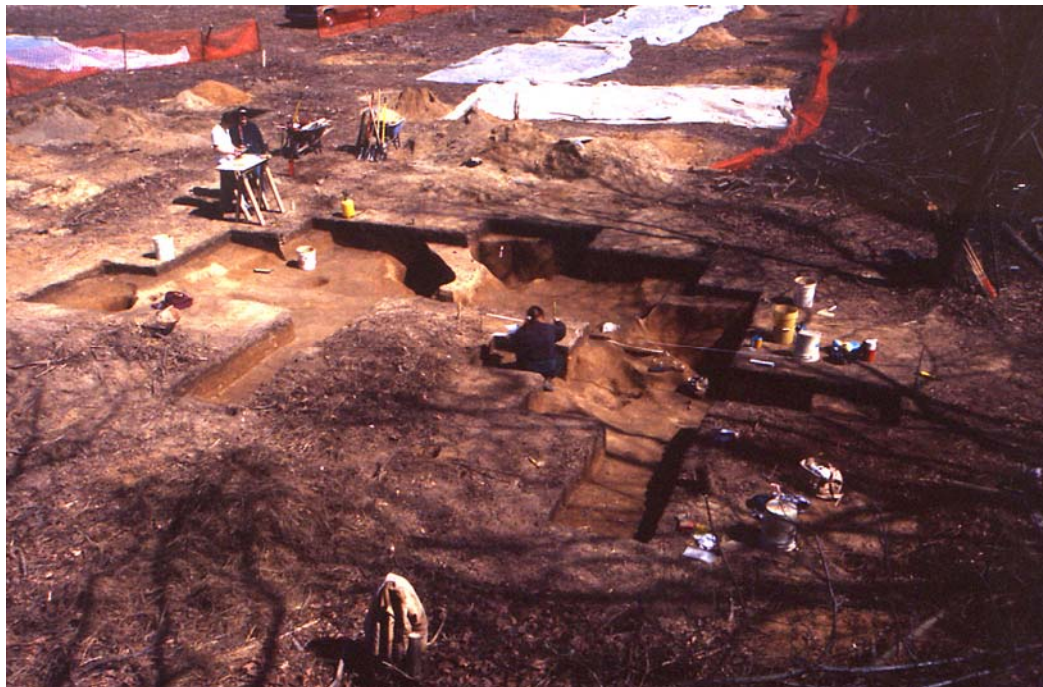


Figure 1.7 Westernmost Block Excavated by Hunter Research (Locus A, Block 2).

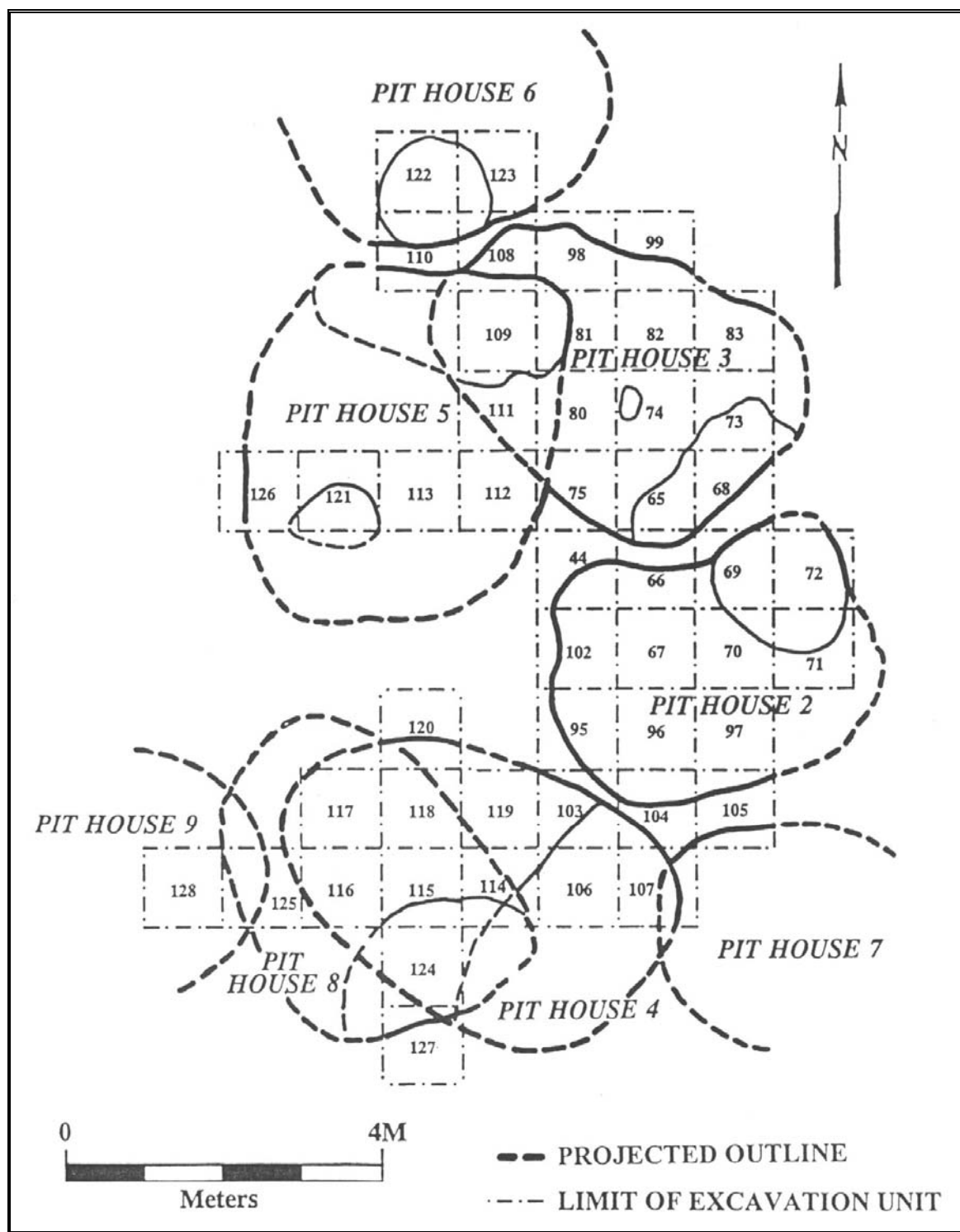


Figure 1.8 Planview Showing Projected Outlines of Overlapping Pithouses 2-9 by Hunter Research (Liebeknecht et al. 1997: Figure 9.3)

A number of interpretations and hypotheses were advanced as a result of the first stage of excavations. A major question raised from the excavations concerned site function and type. In accordance with management plans for the State of Delaware, the researchers questioned whether Hickory Bluff functioned as a large macro-band base camp, or whether the site

functioned as "a small micro-band base camp, seasonally revisited by individual family units or limited sets of families for short term occupations over many generations" (Liebeknecht et al. 1997:9-27). The researchers also pondered whether the site represented multiple activity types, "In between the main periods of occupation, the site most likely also served as a transient camp or a short term procurement/processing station." Additionally, based on extensive on-site working of local lithics procured from nearby cobble beds, the excavators indicated that the site likely functioned as a cobble reduction station. Additional functions were implied by the presence of ceramics, suggesting that this was "a sure indication that food preparation, consumption, and storage were important activities" (Liebeknecht et al. 1997:9-27). As ceramics had net-impressions on their exterior surfaces, fishing in the vicinity of the St. Jones River was also deemed to be an important activity. With respect to the position of Hickory Bluff in a local and regional settlement system, the site was considered a significant locality, which "played a key role in the local settlement-subsistence patterns within the St. Jones River drainage" (Liebeknecht et al. 1997:9-28). Relationships were drawn between Hickory Bluff, the Late Archaic Barker's Landing III sites (1,200 to 500 B.C.) and the Early Woodland Delmarva Adena complex sites (500 B.C. to A.D. 0), particularly the St. Jones Adena site, a major mortuary center located less than two miles downstream.

The excavators considered that "pithouse" architecture and residential community patterning could be inferred from Hickory Bluff, following Custer's (1994) model. The researchers were aware that pithouse interpretations were potentially controversial as claims had been made that these kinds of features represented natural features (Mueller and Cavallo 1995; Thomas and Payne 1981). While cognizant of the wider debate and potential interpretive problems, a pithouse attribution was favored: "The current work at the Hickory Bluff Prehistoric Site tends to favor a cultural origin for the features identified here, thereby supporting UDCAR [University of Delaware Center for Archaeological Research] use of the data for broadly-based reconstructions of cultural process and social forms" (Custer 1994 in Liebeknecht et al. 1997:9-31). A number of architectural attributes that both supported and modified Custer's model were outlined and further developed (Figure 1.9). Based on the excavations, the researchers conjectured that the site contained several hundred pithouses,

projections for the site as a whole derived from the observed density of features in the drainage ditch suggest possibly as many as 700 or 800 pit houses could be present in the archaeological record. Taking the position that the majority of these features have some cultural basis and are correctly interpreted as pit houses, the archaeology of the Hickory Bluff Prehistoric Site offers the chance to examine their morphology, their spatial characteristics and their contents in a fashion that could ultimately lead to the development of a clearer typology of these structures (Liebeknecht et al. 1997:9-36).

PARSONS INVESTIGATIONS

Field Methods

After mitigation of the drainage ditch, archaeological investigations centered on areas where the road and a drainage pond were to be constructed. The Cultural Resource Department of Parsons

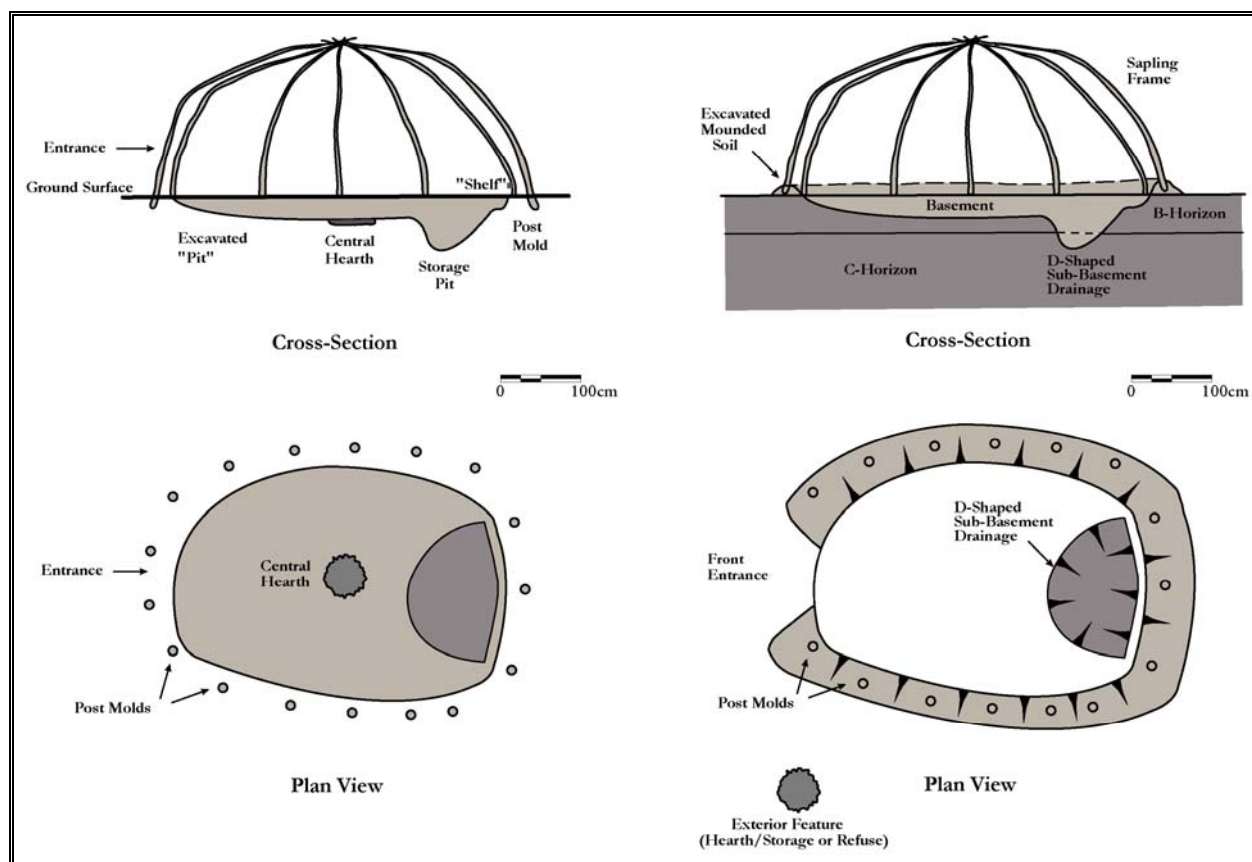


Figure 1.9 Alternate Pithouse Model Proposed for Hickory Bluff by Hunter Research
(Liebeknecht et al. 1997: Figure 9.11)

was contracted to conduct the remainder of the archaeological investigations. Phase III investigations were broad in scope and consisted not only of standard archaeological and geoarchaeological field studies and laboratory analyses but included public outreach activities and actualistic studies such as defining natural feature signatures, feature degradation, ritual feature comparisons, and local lithic resource identification.

The fieldwork lasted for eleven months, from October 1997 through September 1998. The Phase III fieldwork was accomplished in five stages. Field meetings were implemented at the end of each stage in consultation with DelDOT and the Delaware SHPO to discuss the extent and type of data recovered and to determine the research focus of further work and appropriate data recovery techniques. In the latter stages, Native American involvement factored into excavation decisions. A total of 126 STPs and 692 1 x 1 m units were excavated across the site, and 720 square meters of mechanical plowzone removal was conducted in the northeast quadrant (Table 1.2).

To refine an understanding of artifact distributions and densities, fieldwork began with the placement of systematic shovel tests in the original shovel transects and the excavation of new lines of shovel tests within the grid (Figure 1.10). Field counts of artifacts were tabulated and used to generate SURFER[®] distribution maps. Based on resulting distribution maps, a more refined understanding of artifact distribution within the site emerged and showed three main

patterns, an area of artifact absence in the eastern half of the site, an area of artifact concentration along the western zone along the bluff edge, and areas of isolated artifact clusters (Figure 1.10).

Table 1.2 Summary of Phase III Investigations at Hickory Bluff

Phase III Stage	STPs	1 x 1m Units	Mechanical Stripping
1	124	62	
2	0	178	
3	0	310	
4	0	60	720 m ²
5	2	82	
Total	126	692	720 m ²

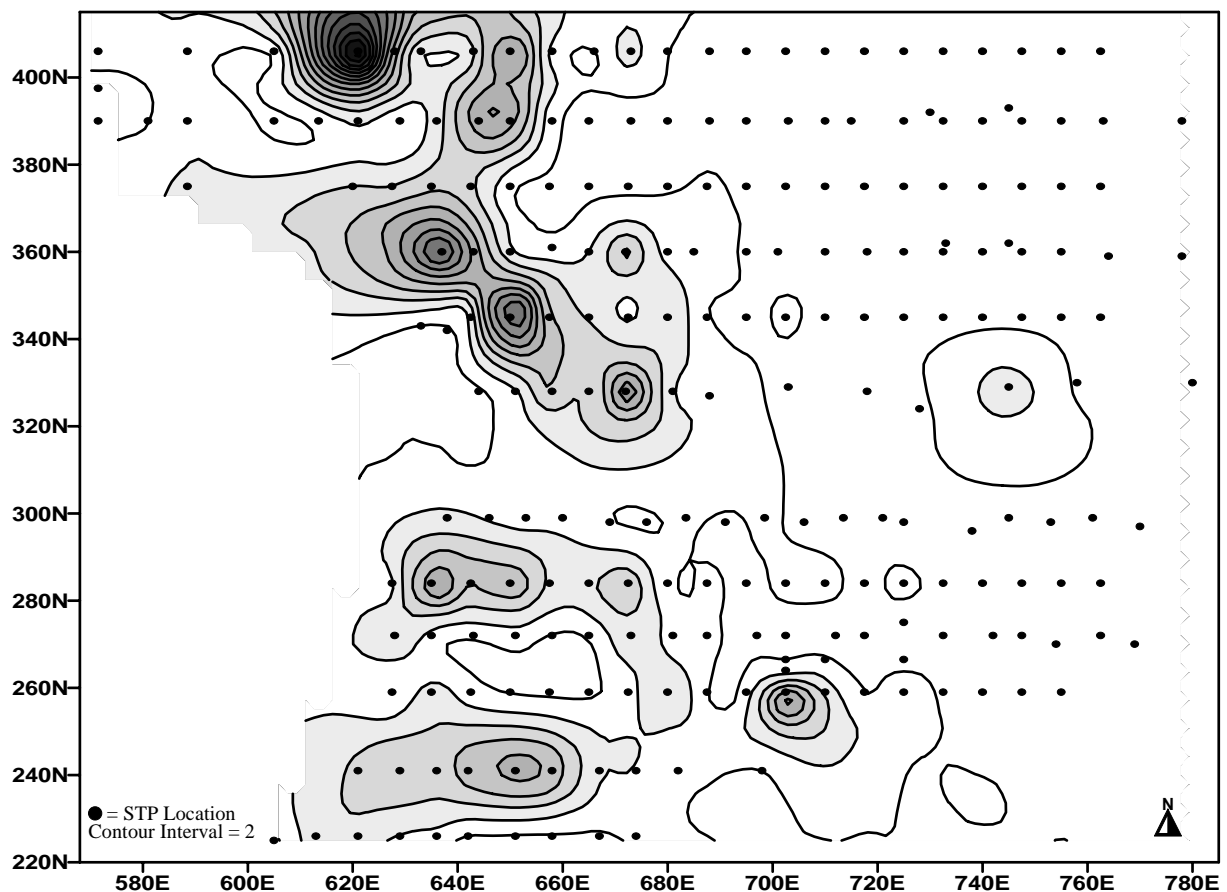


Figure 1.10 Contour Plot of Artifact Density in Shovel Test Pits

Excavation units were used to examine surface and subsurface artifact distributions and landforms, to verify soil profiles and stratigraphy identified by Hunter Research, and expose larger areas around units that produced cultural features, especially those identified as “pithouses” by the earlier excavations (Figure 1.6 and Figure 1.8). Contiguous block excavations were located near discrete basins, thermally altered stone features, and areas of high artifact counts (Figure 1.11). Once again, field counts of unit artifacts were used to generate SURFER[®] distribution maps; these maps pinpointed artifact concentrations and locational trends.

Units were placed in all areas of the site to identify horizontal and vertical extent of various types of features, including basins, thermally altered stone concentrations, and artifact clusters. Units also were placed to examine spatial variations in site occupation, to obtain information about individual versus repeated occupations, and to delineate potential community organization. Field excavations were targeted and most intensive in the northwestern portion of the site as this area proved to contain a diversity of features and high artifact densities (Figure 1.12 and Figure 1.13). The eastern portion of the site exhibited low to moderate artifact densities and plow-truncated features. Mechanical removal of the plow zone was conducted along an east to west transect to identify additional subsurface features.

At the conclusion of all phases of fieldwork (both Hunter Research, Inc. and Parsons investigations), the Hickory Bluff investigations represented one of the laterally broadest excavations in the Mid-Atlantic. The site excavation comprised 223 shovel tests, 819 one by one m units, and 3,020 square meters of plow zone removal (and Table 1.2).

Field Studies

Geoarchaeological studies were conducted to examine the Pleistocene and Holocene site environment, stratigraphic deposits, and feature formation. Select column and feature samples were taken from stratigraphic profiles and features, and geochemical samples were taken to identify potential activity areas. Samples were taken from feature and sedimentary contexts for radiocarbon dating.

Special field studies also were implemented to examine the influence of natural processes on site formation. An experimental feature study was initiated to examine how cultural features degrade through time and to observe animal and plant interactions. A tree excavation study was implemented to examine the morphology of tree throws and tree rots. A gravel study of stone size and raw material type was conducted to examine potential Native American stone tool selection patterns for tool making and thermally altered stone construction.

Field Findings

At the conclusion of all combined phases of fieldwork at Hickory Bluff, a total of 331 features was identified, including 153 thermally altered stone clusters and basins. These structural features, clearly observable in the field, showed spatial clustering or arrangement. In addition, latent features, potentially recognizable as artifact concentrations through computerized contour plotting, were identified.

The field investigations resulted in the recovery of a large and diverse assemblage representing one of the largest excavated collections in Delaware. The artifact assemblage included over 33,000 chipped stone tools and debitage, 26,000 thermally altered stones, and 7,600 ceramic sherds. Rare artifacts included the recovery of two gorgets, an ulu, and uncommon chipped stone tool types. The large and diverse assemblage presented an opportunity to address many aspects of chronology, settlement, subsistence, and technology as well as Delmarva social interactions.

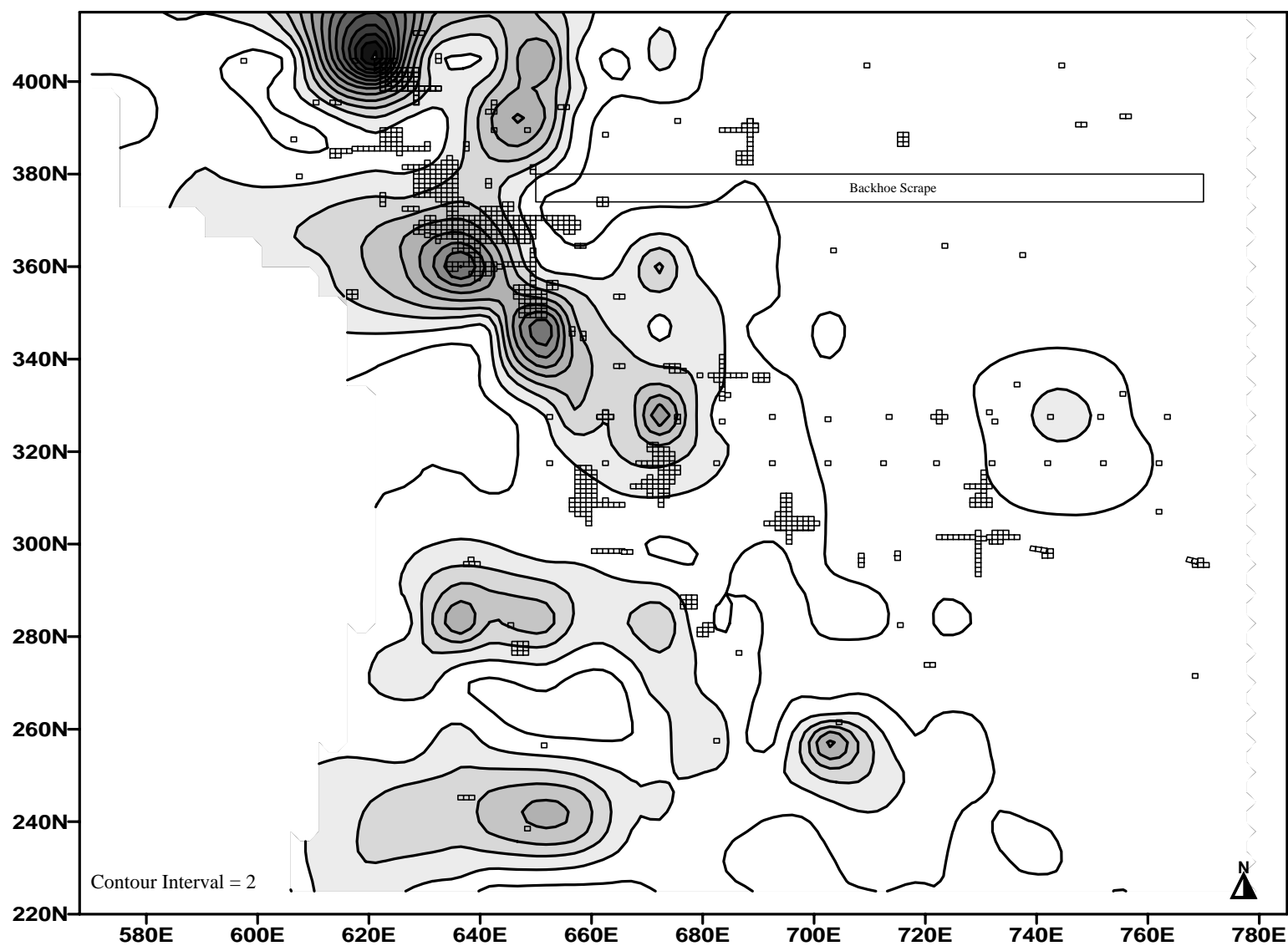


Figure 1.11 Block Excavation Distribution Relative to STP Artifact Densities



Figure 1.12 Locus G Excavations, September 1998, Looking East



Figure 1.13 Loci H and G Excavations, September 1998, Looking Southeast

Additional historical artifacts were encountered during the Phase III investigations. However, the frequency and type of artifacts did not provide new information on the historical component and thus, did not alter the original eligibility determination for that component. Because the historical land use may be a factor in post-depositional processes at Hickory Bluff,

archival research, artifact descriptions, artifact distributions, and historic occupations are documented and are presented in Appendix A.

Public Outreach

An active public outreach program was a significant aspect of the Hickory Bluff field investigations, supported and encouraged by DelDOT and the Delaware SHPO. As long-realized in the twenty-year framework of DelDOT public outreach, much benefit could be derived in reaching out and educating people about the interaction of archaeology and the road building process. The Hickory Bluff public outreach effort was large, wide-ranging and conducted concurrently with daily fieldwork.

Several unusual factors made the Hickory Bluff investigations an ideal opportunity to expand on DelDOT's typical public involvement efforts in archaeology. The site location was of major advantage as it was situated on the DelDOT Headquarters Building parcel in Dover, making it relatively easy for the public to access and visit. The program included operating the site on an "open to the public" basis, with spontaneous site tours and opportunities to dig provided as public visitation dictated. Pre-arranged school, scout, nature center, and other interest group site visits were conducted throughout the duration of the project. The outreach efforts also were directed at the professional community, with opinions solicited about a variety of topics. Additionally, media coverage was obtained through television, newspapers, magazines, and radio. An outcome of long-term public interaction was a sharpened focus on the "how" and "why" questions of doing archaeology. The extensive public outreach efforts at both general and grass roots levels produced a variety of expected and unexpected results, including close interaction with Native Americans.

Native American Involvement

One result of the public outreach program was the interaction with Delaware's Native American community, especially the Nanticoke Indian Association, Inc. of Oak Orchard, Sussex County, and the Lenape Indian Tribe, Inc., of Kent County. Previous interactions between DelDOT and the Lenape Indian Tribe occurred over the past 17 years as a result of road building in the Lenape Community (e.g., Heite and Heite 1985; Heite and Blume 1999). As will be described in following sections, interaction with the Nanticoke led to some changes in perspectives and alterations in research. At the conclusion of fieldwork, two on-site ceremonies were held, a sweatlodge purification ceremony and a public cleansing ceremony. A Native American perspective on the meaning of Hickory Bluff has been provided in workshops, professional conferences, and in this volume. The positive result of this interaction was the re-evaluation of archaeological perspective, the development and incorporation of greater pluralism in interpretation, and the re-shaping of how we portrayed and thought about the past. The raising of these issues and the developing partnerships helped us to re-address our assumptions and to challenge ourselves to think in non-traditional ways, in tandem with other successful examples of partnering (e.g., Dongoske et al. 2000; Swidler et al. 1997).